Subhra Sankha Sarkar

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SKILLS

- **Specialities**: C, Linux, firmware & low-level system software development, network & socket programming, Operating Systems, device drivers, HAL, bash scripting, Java, Python

- **Softwares & Tools**: vim, cscope, ctags, GNU command line utilities, gdb, ClearCase, Git, tcpdump, docker, minicom, busybox, AddressSanitizer, Coverity, CodeStriker, Mantis, JIRA, CA Agile Central

- **Debugging Interfaces**: UART/Serial, USB

- **Systems & Interfaces**: Unit & Integration Testing, Validation & Verification Testing

WORK EXPERIENCE

- **Dish Network**   Denver, CO, U.S.A.
  Embedded Software Engineer   *Mar 2017 - Jun, 2020*

  - **Amazon Prime Video on Hopper3**: Architected and implemented networking backbone for Amazon Prime Video, Netflix and YouTube to run on Hopper3 set-to-boxes (STBs). This implementation enabled Hopper3, a satellite broadcasting STB to double as a streaming powerhouse. Performed integration and stress testing to ensure overall system integrity under heavy load.
  - **Hopper with Snap**: Enabled vast improvements to customer experience by allowing Snap, a plug-and-play device, to communicate with the Internet through Hopper STB. Implemented a generic networking framework that allowed for 2M+ household customers to have 25% faster user-experience (UX) while accessing On-demand, DVR and EPG contents. Conducted integration testing to ensure Snap fits into Hopper ecosystem seamlessly.
  - **System Monitoring Framework**: Implemented a robust system monitoring framework for 4M+ Hopper STBs by reporting process failures through the system monitoring infrastructure. Designed and implemented a set of APIs to facilitate troubleshooting system critical events in open-source modules interfacing with proprietary STB code without infringing copyright. Proactively reported those incidents to a monitoring daemon which, then, forwarded those events to Kibana periodically.

- **Echostar Corporation**   Atlanta, GA, U.S.A.
  Embedded Software Engineer   *Feb 2013 - Feb 2017*

  - **Invidi on Wally**: Individual contributor - designed and implemented support to dynamically insert targeted advertisements on Live stream for the Wally STBs using 3rd party Invidi ad insertion module. This feature allowed Dish to render targeted advertisements to household customers, thereby contributing $10M+ year-over-year incremental ad revenue to company's bottom-line.
  - **Sage ATE**: Core contributor to Automated Test Environment (ATE) for Sage Home Automation suite. ATE was used in the factory to validate hardware assembly and protect system critical security keys on the printed circuit boards (PCBs) while ensuring vendor device driver compatibility with Echostar kernel.
  - **Sage ZigBee Offerings**: Expanded functionality of the ZigBee module for Sage Home Automation middleware, EchoStars IoT offering in the Home Automation space. Enhanced Sages ZigBee portfolio to accommodate vendor supplied as well as in-house devices.
  - **NDK Support for Sling APIs**: Implemented native layer support for streaming video feeds on Android handheld devices by porting FFMpeg and Sling place-shifting APIs for Android platform.

- **Oak Ridge National Laboratory - JICS**   Oak Ridge, TN, U.S.A.
  Graduate Research Assistant   *Summer 2012*

  - **XSEDE Science Gateway**: Designed workflow execution and certificate negotiation modules for a science gateway for submitting computational jobs to XSEDE HPC resources.

- **Clemson University**   Clemson, SC, U.S.A.
  Graduate Research Assistant   *Dec 2010 - Dec 2012*

  - **System Infrastructure & Web-servers**: Designed and implemented web-server applications and science gateways for submitting computational jobs on Palmetto high-performance computing cluster.

Education

- **Clemson University**   Clemson, SC, U.S.A.
  Master of Science in Computer Science   *Aug. 2010 – Dec. 2012*

- **Maulana Azad National Institute of Technology**   Bhopal, M.P., India
  Bachelor of Technology in Computer Science & Engineering   *Aug. 2002 – July. 2006*

Projects

- **Nanvix**: UNIX-like open-source operating system written from scratch to address the needs of emerging multi-core platforms while delivering fast performance. Contributed to the development of command history and clock implementation features.
- **VGA Graphics Driver**: Designed and implemented a device driver including an interrupt handler for a PerMedia 2M type PCI graphics card. The driver enabled users to draw figures using memory-mapped FIFO control registers and DMA buffers.

Posters & Publications

- **Selected Publication**: S Sarkar, S Witham, J Zhang, M Zhenirovskyy, W Rocchia and E Alexov "DelPhi Web Server: A comprehensive online suite for electrostatic calculations of biological macromolecules and their complexes", Comm. Comp. Phys., (2013), 13, 269-84
- **Selected Poster**: B Rekepalli, P Giblock, C Reardon, M Fahey, S Sarkar "Petascale Informatics Applications Development on XSEDE Supercomputers" in XSEDE 2012 (won Best Poster award)